What is claimed is:

1. An applicator system for surgical prep solution, the system comprising:

a spreader element comprising:

a body comprising an orifice;

a pad attached to the body over the orifice;

a stem comprising a distal end attached to the body and a passage extending between the distal end of the stem and a proximal end of the stem, wherein the passage is in fluid communication with the orifice at the distal end of the stem;

a collapsible container comprising:

surgical prep solution;

a spout adapted to attach to the proximal end of the stem, wherein the surgical prep solution can be delivered to the passage for delivery to the pad;

wherein the collapsible container comprises an original volume and a collapsed volume after dispensing of the surgical prep solution, and further wherein the collapsible container recovers about 50% or less of a difference between the original volume and the collapsed volume within 30 seconds of dispensing a majority of the surgical prep solution.

2. The system of claim 1, wherein the collapsible container recovers about 25% or less of a difference between the original volume and the collapsed volume within 30 seconds of dispensing a majority of the surgical prep solution.

3. The system of claim 1, wherein the surgical prep solution comprises iodine.

4. The system of claim 3, wherein the collapsible container is substantially impermeable to ethylene oxide gas.

5. The system of claim 1, wherein the spreader element further comprises a spreader seal between the pad and the body.

6. The system of claim 5, wherein the spreader seal comprises a weld such that the pad is welded to the body.

7. The system of claim 1, wherein the spout comprises a container seal, and further wherein the spreader element comprises a piercing element adapted to open the container seal when the spout is attached to the stem.

8. The system of claim 7, wherein the piercing element comprises an annular die.

9. The system of claim 1, further comprising a flow restrictor.

10. The system of claim 9, wherein the flow restrictor comprises the passage, and further wherein the passage comprises a ratio of length of the passage between the distal and proximal ends to a minimum cross-sectional dimension of the passage of about 20:1 or more.

11. The system of claim 9, wherein the flow restrictor comprises the orifice.

12. The system of claim 1, wherein the spreader element and the container comprise sterile exterior surfaces.

13. A method of applying surgical prep solution, the method comprising:

providing a spreader element comprising a body comprising an orifice; a pad attached to the body over the orifice, a stem comprising a distal end attached to the body and a passage extending between the distal end of the stem and a proximal end of the stem, wherein the passage is in fluid communication with the orifice at the distal end of the stem;

providing surgical prep solution in a collapsible container;

attaching the collapsible container to the proximal end of the stem, wherein the surgical prep solution is in fluid communication with the passage of the stem; and

dispensing the surgical prep solution into the passage by compressing the collapsible container, wherein the collapsible container comprises an original volume

and a collapsed volume after dispensing of the surgical prep solution, and further wherein the collapsible container recovers about 50% or less of a difference between the original volume and the collapsed volume within 30 seconds of dispensing a majority of the surgical prep solution.

14. The method of claim 13, wherein the spout comprises a container seal and the spreader element comprises a piercing element, and further wherein attaching the spout to the stem comprises piercing the container seal with the piercing element.

15. The method of claim 13, further comprising sterilizing the spreader element and the collapsible container before attaching the spout to the stem.

16. The method of claim 13, wherein the surgical prep solution comprises iodine and the collapsible container is substantially impermeable to ethylene oxide gas before the dispensing.

17. The method of claim 13, wherein the spreader element further comprises a spreader seal between the pad and the body.

18. The method of claim 17, wherein providing the spreader element comprises welding the pad to the body to form the spreader seal.

19. A method of manufacturing an applicator system for surgical prep solution, the method comprising:

providing a spreader element comprising a body comprising an orifice; a pad attached to the body over the orifice; a stem comprising a distal end attached to the body and a passage extending between the distal end of the stem and a proximal end of the stem, wherein the passage is in fluid communication with the orifice at the distal end of the stem;

providing a collapsible container comprising surgical prep solution and a spout adapted to attach to the stem of the spreader element, wherein the surgical prep solution can be delivered to the passage for delivery to the pad;

wherein the collapsible container comprises an original volume and a collapsed volume after dispensing of the surgical prep solution, and further wherein the collapsible container spontaneously recovers about 50% or less of a difference between the original volume and the collapsed volume within 30 seconds of dispensing a majority of the surgical prep solution.

20. The method of claim 19, further comprising sterilizing the spreader element and the collapsible container.

21. The method of claim 19, wherein the surgical prep solution comprises iodine and the collapsible container is substantially impermeable to ethylene oxide gas.

22. The method of claim 19, wherein the spreader element further comprises a spreader seal between the pad and the body.

23. The method of claim 22, wherein providing the spreader element comprises welding the pad to the body to form the spreader seal.

24. An applicator system for surgical prep solution, the system comprising:

a spreader element comprising:

a body comprising an orifice;

a pad attached to the body over the orifice;

a stem comprising a distal end attached to the body and a passage extending between the distal end of the stem and a proximal end of the stem, wherein the passage is in fluid communication with the orifice at the distal end of the stem;

a collapsible container attached to the proximal end of the stem, the collapsible container retaining surgical prep solution therein;

wherein the collapsible container comprises an original volume and a collapsed volume after dispensing of the surgical prep solution, and further wherein the collapsible container recovers about 50% or less of a difference between the original

volume and the collapsed volume within 30 seconds of dispensing a majority of the surgical prep solution.

25. The system of claim 24, wherein the container comprises a container seal retaining the surgical prep solution within the collapsible container.

26. An applicator system for surgical prep solution, the system comprising:
a container retaining surgical prep solution therein; and
a spreader element comprising:
a body comprising an orifice;
a pad attached to the body over the orifice;
a stem comprising a distal end attached to the body and a passage extending between the distal end of the stem and a proximal end of the stem, wherein the passage is in fluid communication with the orifice at the distal end of the stem; and
a receptacle at the proximal end of the stem, the receptacle extending around at least a portion of a circumference of the container when the container is attached to the spreader element.

27. The system of claim 26, wherein the receptacle extends around only a portion of the circumference of the container when the container is attached to the spreader element.

28. The system of claim 26, wherein the container comprises a collapsible container, and further wherein the collapsible container comprises an original volume and a collapsed volume after dispensing of the surgical prep solution, and further wherein the collapsible container recovers about 50% or less of a difference between the original volume and the collapsed volume within 30 seconds of dispensing a majority of the surgical prep solution.

29. An applicator system for surgical prep solution, the system comprising:
a collapsible container comprising:

surgical prep solution; and

a spout;

a spreader element comprising:

a body comprising an orifice;

a pad attached to the body over the orifice;

a stem comprising a distal end attached to the body and a passage extending between the distal end of the stem and a proximal end of the stem, wherein the proximal end of the stem is adapted to attach to the spout of the collapsible container, wherein the passage is in fluid communication with the orifice at the distal end of the stem and the collapsible container when the proximal end of the stem is attached to the spout;

wherein the passage comprises a ratio of length of the passage between the distal and proximal ends to a minimum cross-sectional dimension of the passage of about 20:1 or more whereby flow of the surgical prep solution to the pad is restricted.

30. The system of claim 29, wherein the collapsible container comprises an original volume and a collapsed volume after dispensing of the surgical prep solution, the collapsible container recovering about 50% or less of a difference between the original volume and the collapsed volume within 30 seconds of dispensing a majority of the surgical prep solution.

31. The system of claim 29, wherein the collapsible container comprises an original volume and a collapsed volume after dispensing of the surgical prep solution, the collapsible container recovering about 25% or less of a difference between the original volume and the collapsed volume within 30 seconds of dispensing a majority of the surgical prep solution.

32. The system of claim 29, wherein the surgical prep solution comprises iodine.

33. The system of claim 32, wherein the collapsible container is substantially impermeable to ethylene oxide gas.

34. The system of claim 29, wherein the spreader element further comprises a spreader seal between the pad and the body.

35. The system of claim 34, wherein the spreader seal comprises a weld such that the pad is welded to the body.

36. The system of claim 29, wherein the spout comprises a container seal, and further wherein the spreader element comprises a piercing element adapted to open the container seal when the spout is attached to the stem.

37. The system of claim 36, wherein the piercing element comprises an annular die.

38. The system of claim 29, wherein the flow restrictor comprises the orifice.

39. The system of claim 29, wherein the spreader element and the container comprise sterile exterior surfaces.

40. The system of claim 29, wherein the surgical prep solution comprises a viscosity of 100 cps or less.

41. The system of claim 29, wherein the surgical prep solution comprises a surface tension of 50 dynes/cm or less.

42. An applicator system for surgical prep solution, the system comprising:

a collapsible container comprising:

surgical prep solution; and

a spout;

a spreader element comprising:

a body comprising an orifice;

a pad attached to the body over the orifice;

a stem comprising a distal end attached to the body and a passage comprising a flow restrictor, the stem extending between the distal end of the stem and a proximal end of the stem wherein the proximal end of the stem is adapted to attach to the spout of the collapsible container, and wherein the passage is in fluid communication with the orifice at the distal end of the stem and the collapsible container when the proximal end of the stem is attached to the spout, and whereby flow of the surgical prep solution to the pad is restricted.

43. The system of claim 42, wherein the collapsible container comprises an original volume and a collapsed volume after dispensing of the surgical prep solution, the collapsible container recovering about 50% or less of a difference between the original volume and the collapsed volume within 30 seconds of dispensing a majority of the surgical prep solution.

44. The system of claim 42, wherein the collapsible container comprises an original volume and a collapsed volume after dispensing of the surgical prep solution, the collapsible container recovers about 25% or less of a difference between the original volume and the collapsed volume within 30 seconds of dispensing a majority of the surgical prep solution.

45. The system of claim 42, wherein the surgical prep solution comprises a viscosity of 100 cps or less.

46. The system of claim 42, wherein the surgical prep solution comprises a surface tension of 50 dynes/cm or less.

47. An applicator system for surgical prep solution, the system comprising:
a container retaining surgical prep solution therein; and
a spreader element comprising:
a body comprising an orifice;
a pad attached to the body over the orifice;

a stem comprising a distal end attached to the body and a passage extending between the distal end of the stem and a proximal end of the stem, wherein the passage is in fluid communication with the orifice at the distal end of the stem; and

a receptacle at the proximal end of the stem, the receptacle extending around at least a portion of a circumference of the container when the container is attached to the spreader element;

48. The system of claim 47, wherein the receptacle extends around only a portion of the circumference of the container when the container is attached to the spreader element.

49. A method of applying surgical prep solution, the method comprising:

providing a sterilized spreader element comprising a body comprising an orifice; a pad attached to the body over the orifice, a stem comprising a distal end attached to the body and a passage extending between the distal end of the stem and a proximal end of the stem, wherein the passage is in fluid communication with the orifice at the distal end of the stem;

providing surgical prep solution in a sterilized collapsible container;

attaching the collapsible container to the proximal end of the stem, wherein the surgical prep solution is in fluid communication with the passage of the stem; and

dispensing the surgical prep solution into the passage by compressing the collapsible container, wherein the collapsible container comprises an original volume and a collapsed volume after dispensing of the surgical prep solution, and further wherein the collapsible container recovers about 50% or less of a difference between the original volume and the collapsed volume within 30 seconds of dispensing a majority of the surgical prep solution.

50. A method of manufacturing an applicator system for surgical prep solution, the method comprising:

providing a spreader element comprising a body comprising an orifice; a pad attached to the body over the orifice; a stem comprising a distal end attached to the

body and a passage extending between the distal end of the stem and a proximal end of the stem, wherein the passage is in fluid communication with the orifice at the distal end of the stem;

providing a collapsible container comprising surgical prep solution and a spout adapted to attach to the stem of the spreader element, wherein the surgical prep solution can be delivered to the passage for delivery to the pad;

sterilizing the spreader element and the collapsible container;

wherein the collapsible container comprises an original volume and a collapsed volume after dispensing of the surgical prep solution, and further wherein the collapsible container spontaneously recovers about 50% or less of a difference between the original volume and the collapsed volume within 30 seconds of dispensing a majority of the surgical prep solution.

51. The method of claim 50, wherein the collapsible container is sterilized while the surgical prep solution is located within the collapsible container.